



Consultant Services Bulletin

News Bulletin No. 02-1, March 2002

CONSULTANT NEWS BULLETIN 02-1

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Consultant Services Section News

Congratulations are in order for Mr. Joel Myers who was recently promoted to the position of Agreements Engineer Supervisor, Consultant Services Section, Design Division. Mr. Myers has assumed responsibility for oversight of design fee estimating and negotiating. All new and supplemental fee proposals may be submitted to his attention. Mr. Joel Thurman has been hired to fill the Agreements Engineer position vacated by Mr. Myers.

Congratulations are also in order for Ms. Hollie Bays and Ms. Joan Staggs who were recently married. Their married names are Mrs. Hollie Pratt and Mrs. Joan Widdifield.

Standard Documents CD Subscription

All subscriptions for the Standard Documents CD ended with the March 2002 version. The Standard Documents CD effective for the September 2002 letting has been distributed to all subscribers who have renewed their subscriptions. If you have not renewed your subscription you may find a renewal form available at www.state.in.us/dot/TS/contract/general/publications.htm.

Bridge Railing

The TS-1 railing (which has a single bolt connection) is a PL-1 (TL-2) railing. See Design Memorandum 99-16.

This article updates information in Appendix I of Consultant Newsletter No. 98-1. The side-mounted thrie beam rail shown on page 2 is a PL-1 (TL-2) railing. Page I3 of Consultant Newsletter No. 98-1 is deleted.

Paved Shoulder in Front of Guardrail (Supersedes CSB 01-1, p.8)

Contrary to 49-5.01 (02) always pave the outside shoulder on INDOT routes to the face of the guardrail when the guardrail is located 4.5 meters or less from the edge of travel lane.

With respect to the inside shoulder on INDOT routes, follow the standard drawing for an MS guardrail end treatment.

An LPA may continue to follow 49-5.01 (02).

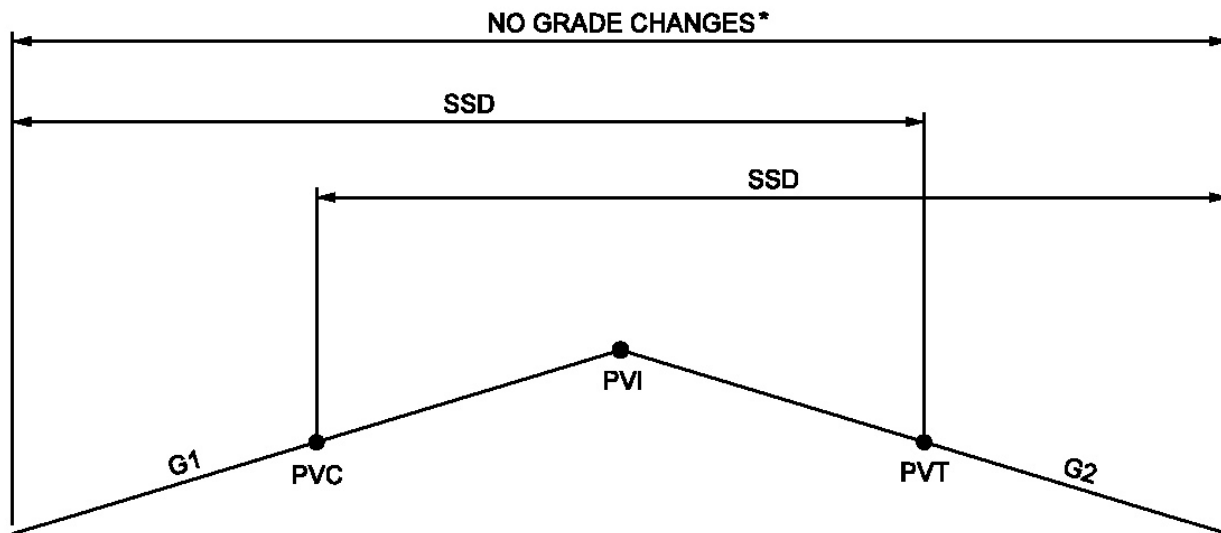
Vertical Stopping Sight Distance (Supersedes article on page 1, CSB 00-2)

When the length of the vertical curve is equal to or greater than the stopping sight distance, a comparison of the K values (K required and K provided) will determine if the required stopping sight distance is provided.

When the length of the vertical curve is less than the stopping sight distance the designer may use any of the following methods to check the stopping sight distance:

1. Using K values

K provided \geq K required and there are no changes to G1 or G2 as shown below.



* No other vertical curves or angular breaks within this zone.

2. Using equations

a. crest vertical curves

$$L = 2S - 404/A \quad **$$

See page 283 of the 1994 AASHTO "Metric Green Book."

b. sag vertical curves

$$L = 2S - (120 + 3.5S)/A \quad **$$

See page 288 of the 1994 AASHTO "Metric Green Book".

** These equations are only valid if there are no other vertical curves or angular breaks in the area shown in item 1 above.

3. Checking graphically

- For passenger car stopping sight distance (Level 1) at a crest vertical curve place the "eye" 1070 mm above the pavement and the height of the object is 150 mm.
- For passenger car stopping sight distance (Level 1) at a sag vertical curve on a 4R project or project to be designed in accordance with Chapter 44, place the headlight at 600 mm above the pavement and the height of the object is 0 mm. The light beam is assumed at a 1° upward divergence from the longitudinal axis of the vehicle.

The distance between the "eye" (for crest vertical curves) or the headlight (for sag vertical curves) and the object that is unobstructed (by the road, backslope of a cut

section, guardrail, etc.) is the stopping sight distance provided. It is necessary to check it in both directions for 2-lane highways.

When the length of the vertical curve is less than the stopping sight distance and the stopping sight distance provided exceeds that required (even though the K provided is less than K required) the K value will be treated as a Level 3 item instead of Level 1.

Design Exceptions for Projects Using English Units

Recently, we have received design exceptions for projects that are designed using English units and which began plan development many years ago. Design Memorandum 01-13 established the methodology to determine the design criteria for projects using English Units - - in essence the methodology is to use the Design Manual and hard convert for some elements (e.g. lane width and shoulder width) and soft convert for some elements (e.g. minimum radius and stopping sight distance).

It is not necessary to obtain a design exception for an element if all of the following criteria are met:

1. Plan development using English units began before September 1, 1995.
2. A. 4R Design Criteria
The appropriate design criterion (English units) in the 2001 AASHTO "Green Book" is met.

OR

B. 3R Design Criteria
The appropriate design criterion (English units) in Road Memorandum 95 dated January 2, 1991, is met.
3. The designer discloses, in writing, the elements that do not meet the criteria in Design Memorandum 01-13 and identifies the relevant criteria in the 2001 AASHTO "Green Book" (including page number references) or Road Memorandum 95. The designer should forward this information to the INDOT reviewer for concurrence. A Design Section Manager must also concur.

Design Approval

In order to obtain Design Approval for a project, it is necessary to have met the environmental requirements. The environmental requirements are met if one of the following conditions is met:

1. Environmental Impact Statement is complete and the Record of Decision (ROD) has been issued; or
2. Environmental Assessment is complete and a finding of no significant impact (FONSI) is made by Federal Highway Administration; or
3. Categorical Exclusion is complete (if there is a line for Federal Highway Administration to sign, it must be signed - - See Appendix A.)

Linear Grading

Linear grading should be limited to the 3 situations listed in 17-2.06, unless the designer receives the written approval of

1. the appropriate design section manager, and
2. the appropriate district construction engineer or area engineer.

In addition, the last paragraph of 17-2.06 is revised to conform to 203.27 (c) of the Standard Specifications:

Where the plans and/or contract provide for the pay item Linear Grading, the measurement for payment will be based on the length of roadway (per kilometer) actually constructed to the lines and grades shown in the typical sections. Separate typical sections showing the limits of linear grading should be provided for the mainline, S-lines and each interchange ramp. Do not include interchange ramps in the mainline measurement. All classes of excavation (e.g., common excavation, rock excavation, unclassified excavation), **including required borrow**, are included in this pay item. If linear grading and the traditional method of paying for cut and fill are all going to be included in a contract, delineate the limits of linear grading in the plans.

With respect to pay quantity, it shall be the limits of linear grading measured along the centerline, without any deductions for bridges, etc. For example, a project goes from station 1+000 Line "A" to station 9+000, and it includes 2 bridges with a combined length of 200 meters. The project is a divided lane facility with linear grading in the median and beyond the outside shoulders. The pay length would be 8 stations. Note that for projects using English units there is a discrepancy in the units (203.27 (c) says pay per mile, but 203.28 says per station (100 feet)). Design recommends that linear grading also be paid in stations (100 feet) for English projects.

Design Speed

On 3R projects the minimum design speed must equal the legal speed limit (If no speed limit is posted in rural areas the legal speed limit is 55 mph (90 km/h)). See 40-3.02 (02). It is acceptable for the design speed to be less than the current legal speed limit, provided all of the following conditions are met:

1. A speed study is conducted.
2. The owner adopts an ordinance (or official action for INDOT roads) to implement a lower speed limit.
3. Regulatory signs to implement the design speed are erected before the project is constructed or are included in the construction plans for the project.

Design Criteria for S-Lines on 4R Projects

Until now the design philosophy has been to design S-lines to 4R criteria when the mainline is designed to 4R criteria; if such criteria were not met, a design exception was needed for each substandard level one element. Henceforth, each S-line should be individually evaluated to determine the appropriate design criteria (4R or 3R) based upon the factors in 40-6.02 (01) for S-

lines which are on the National Highway System (NHS) and 40-6.02 (02) for S-lines which are not on the NHS.

Regardless if the S-line will be designed to 3R criteria, the intersection sight distance must be designed to meet the 4R criteria in 46-10.

Level One Checklist for S-Lines

It is not necessary to submit a level one checklist for an S-line that does not exceed the work necessary to build the appropriate public road approach, including the required taper distance to account for transitioning to the existing pavement width. This provision does not relieve the designer of meeting all critical design elements in this area (eg. Maximum grade and vertical stopping sight distance) and intersection sight distance.

Intersection Sight Distance during Maintenance of Traffic

The designer shall provide calculations and drawings to show that adequate intersection sight distance is provided during each maintenance of traffic phase.

The reviewer (INDOT or INDOT's review consultant) shall verify.

References to the Green Book

Prior Consultant Newsletters have referenced the AASHTO Green Book. Such references should be interpreted as the 1994 AASHTO "Green Book." Although the 2001 "Green Book" has been published, INDOT is in the process of reviewing it and making changes to the Design Manual.

Road Rehabilitation Projects

On road (interstate, U.S. route, or state route) rehabilitation projects it is not necessary to wait until the preliminary field check to initiate the geotechnical investigation. As soon as possible the designer should provide the Geotechnical Section, with the following information with respect to such projects:

1. Location (Road XX from point A to point B)
2. Anticipated pavement treatment (for example: resurface, rubblize, etc.) from the scope or mini scope.
3. Identify locations where the pavement will be widened.

If there is a change in scope after the above information is provided to the Geotechnical Section, the designer must immediately notify the Geotechnical Section.

Checklist for Beginning Design Work on “Abbreviated Engineering Assessment (Mini-Scope)” Projects

1. Check if aerial photos showing the anticipated R/W are available from the Engineering Assessment Section. Since “Mini-Scopes” lack detail about R/W takes, aerial photographs showing the anticipated R/W have been prepared for most “Mini-Scope” projects. These aerials were developed to facilitate preparation of the environmental document.
2. Check if the environmental work is progressing and find out if there are any known environmental pitfalls. On many “Mini-Scope” projects the environmental document is prepared concurrently with the preliminary design. Lack of an approved environmental document can hinder design work in environmentally sensitive areas and will prevent a project from being advanced to the design hearing stage.
3. Most of the non-interstate road rehabilitation “Mini-Scope” projects are conventional 3R pavement rehabilitation projects with a 15 to 20 year service life for the resurface areas. Use the following criteria in evaluating 3R projects:
 - The horizontal alignment should be evaluated in accordance with 55-4.03.
 - Superelevation should be upgraded to standard, or a design exception will be required.
 - Substandard vertical curves may remain in place if they satisfy the benefit/cost criteria outlined in 55-4.04. Generally design documentation will suffice, rather than a full design exception. Old plans should be obtained, if possible, so the existing vertical curves can be checked against the required design criteria.
 - If vertical alignment correction is necessary to obtain intersection sight distance, the vertical alignment should be improved to standard.
4. If the “Mini-Scope” on a 3R project recommends a 6:1 or 4:1 roadway foreslope within the obstruction free zone, there is generally no reason to exceed the given recommendation. The intent of many of these projects is to keep embankment reconstruction and R/W acquisition to a minimum.
5. Review the pavement design recommended in the “Mini-Scope”. If the project is primarily a resurface to extend the service life of the existing pavement, the project can be designed without underdrains. This will allow the use of substantially shallower roadside ditches. Designers should seek the concurrence of the Pavement Design Engineer and document his preliminary recommendations regarding underdrains. If the project requires pavement replacement in excess of 30%, spot usage of underdrains may be required.
6. Verify with the District the “Mini-Scope” recommendations regarding maintenance of traffic. If the project is to be constructed under traffic, substantial changes to the vertical alignment will result in significant additional expense for temporary widening or temporary runarounds.
7. A grade review meeting or even possibly a pre-grade review meeting should be held. Include representatives from the following areas: Engineering Assessment, Environmental Assessment, Pavement Design, District Development, and Design.

Guardrail Location and Shy Line Offset

On 4R projects, the guardrail should be located at least the shy line offset distance from the edge of the nearest through lane. See 49-5.02 (01). On 3R projects, the guardrail should desirably be located at least the shy line offset distance from the edge of the nearest through lane, but not less than 1.2 m. See 5-5.04 (02) (item 2).

Exceptions to the above criteria require level 2 documentation.

Obstruction Free Zone

55-5.02 discusses how to determine the width of the obstruction free zone (OFZ) for 3R projects. In general, the manual states the OFZ is computed by adding the shoulder width provided in the appropriate table in Section 55-3 to a specified distance (based upon the design functional classification, design speed, and design year AADT). In order to clarify the method to determine the OFZ, it is noted that the shoulder width to be used is the usable shoulder width provided for the project.

The following example illustrates the computation of the OFZ:

Given:

Design Criteria	3R
Design Functional Classification	Local Agency Collector
Rural/Urban	Rural
V	90 km/h
AADT	1200 vpd
Lane Width	3.3 m
Usable Shoulder Width	1.8 m
Paved Shoulder Width	1.2 m

Based upon 55-5.02 (item 2) the minimum OFZ is 2.0 m plus the usable shoulder width provided. Therefore the minimum OFZ is 3.8 m from the edge of the through lane.

Temporary Right-of-Way for Lawn Grading

Generally, “Temporary right-of-way for lawn grading” can be used for up to a 2’ (0.6 m) difference in elevation; otherwise permanent right-of-way should be purchased. See 85-5.01 (07) for further information.

Erosion at Ends of Bridges

Recently, the Design Division surveyed the 6 districts regarding the riprap turnouts at bridge corners. As a result thereof, some minor modifications have been made to the details. The new details are contained in Appendix B. The details should be incorporated into all appropriate bridge projects to be let after July 1, 2002. The details in Appendix E of CSB 98-2 are superseded.

Transverse Edge Beam

A transverse edge beam shall be provided from coping to coping at the end of the deck next to a deck joint.

Piles Driven into Shale

AASHTO 4.5.15.1.1 states “pile footings shall be proportioned such that the minimum center-to-center pile spacing shall exceed the greater of 2 feet 6 inches or 2.5 pile diameters/widths.” The Geotechnical Section has requested that piles driven into shale have minimum center-to-center pile spacing exceeding the greater of 2 feet 6 inches or 3.0 pile diameters/widths.

Pile Design

In general, piles shall be designed such that the center-to center pile spacing exceeds the greater of:

- a. Two feet six inches, or
- b. 2.5 pile diameters (or widths).

See 4.5.15.1.1.

With respect to friction piles in cohesive soils they shall be designed with a center-to-center spacing that exceeds the greater of:

- a. Two feet six inches, or
- b. 3.0 pile diameters (or widths).

See 4.5.6.4. This spacing will allow a pile group efficiency value of 1.0 to be used.

Curbs

Henceforth, do not use the terms barrier curb or mountable curb in design summaries. Instead refer to vertical curb or sloping curb.

Quantity Calculations

Designers shall refer all requests for quantity calculations after a contract has been advertised (6 weeks or less before bids are opened) to the appropriate district construction engineer.

Requests for quantity calculations received after the tracings are turned in but more than 6 weeks before bids are opened should be referred to INDOT’s Legal Division. See 17-1.02.

Practice Pointers

1. On INDOT 3R projects, the guardrail offset is measured from the usable shoulder location.
For example, if,

Paved Shoulder	=	4' (1.2 m)
Usable Shoulder	=	8' (2.4 m)
Location of guardrail		
0 offset		8' (2.4 m)
1' (0.3 m) offset		9' (2.7 m) (desirable for 3R)

For example, see 55-3 (6) note 9.

2. In general, the cross slope of a shoulder should be the same across the full width of the usable shoulder. One exception is noted in item 4 of 55-4.03(02).
3. For crest vertical curves with a length less than the stopping sight distance Figure III-39 of the 1994 Metric Green Book or the following formula may be used to determine if vertical stopping sight distance is provided:

$$L = 2S - \frac{404}{A}$$

See pages 283 and 284 of the 1994 Metric Green Book.

Note that if the K provided exceeds the K required it is not necessary to do either of the above checks even though L is less than S.

4. If a property owner has a pipe instead of an open ditch on its property it is reasonable to give them the same (instead of an open ditch) as part of a project.
5. For single span structures do not show minimum pile tip elevations on the foundation review form or the plans. Riprap is protecting the piles from scour. The contractor will drive the piles until the ultimate load is achieved. Minimum pile tip elevations are a function of scour.
6. Previously the bridge rail delineator spacing was shown on the standard drawing. The spacing is now contained in 602.03 (f); the spacing is the same regardless if the delineators are on the bridge rail, concrete median barrier, etc. The spacing is to be 40 feet (12 m).
7. All level one criteria must be met from beginning of project to end of project, including all paving exceptions. If the criteria are not met, the designer must apply for a design exception or revise the plans.
8. After submission of final right-of-way plans, the designer is responsible for submitting all right-of-way revisions to INDOT as soon as possible. The Land Acquisition Division needs the current information so it can:
 - a) prepare legal descriptions for the correct property
 - b) appraise the correct acquisition
 - c) show correct features of the project to the property owners.

9. The computations for the level 1 items and intersection sight distance are to be initialed and dated by the designer and reviewer before submitting to INDOT or INDOT's review consultant.
10. All design exceptions for a project can be included in one document.
11. Do not include brand names of 3-sided culverts in the plans or special provisions. Refer to the types of 3-sided structures as "flat top" or "arch".
12. Show the embankment for a temporary runaround on the cross-sections of the mainline. You can see potential conflicts.
13. Beginning with the December 2001 letting it is no longer necessary to submit an index of standard drawings for projects (regardless at which stage the project is).
14. If the design requires a deviation from a standard drawing, it can be handled by either of the following methods:
 - a) Include a special detail in the plans
 - b) Make reference to a standard, which is not applicable to the situation, but is warranted any way. For example, 610-DRIV-05 is applicable if the mainline shoulder is paved and 2.4 m or greater in width. In restricted situations, it may be appropriate to have the drive constructed in accordance with 610-DRIV-04 instead. In this case, it will be sufficient to add a note on the approach table "remarks" column --- "Construct in accordance with 610-DRIV-04".
15. When you receive the Notice of Intent (NOI) letter with respect to a Rule 5 you can show the "permit" as received on the "Scope/Environmental Compliance Certification/Permit Application Certification" form.
16. When you receive the Notice of Intent (NOI) letter with respect to a Regional General Permit (RGP) for projects with less than 0.1 acre of disturbed wetlands, you can show the Corps permit as received on the "Scope/Environmental Compliance Certification/Permit Application Certification" form.
17. On projects designed using English units there should be a tick mark on the top of the centerline every 100 feet and a tick mark that crosses the centerline every 500 feet.
18. In Consultant Newsletter 96-1 (page 2), INDOT instituted the policy of requiring asbestos certifications for new bridge construction, bridge replacement, and bridge rehabilitation projects. In Consultant Newsletter 98-1 (page 1), INDOT established the distribution (by Designer) requirements for such certifications: original to the appropriate District Bridge Inspector, copy to Environmental Services Manager (Phyllis Hockett), and a copy in the design calculation book.
19. Don't show the special grading for guardrail end treatments on the typical cross sections shown on the Typical Cross Section sheet(s).

20. The obstruction free zone is irrelevant when calculating the length of need for guardrail, regardless if it is a 3R or 4R project. See section 55-5.04 (01) item 5.
21. When designing guardrail (for both 4R and 3R projects) for side slopes steeper than 4:1 do not use the clear zone for 4:1 fill slopes; instead use the procedure described in section 49-2.03 (01) item 2c and Figure 49-2F.
22. Item 5 of 55-5.04 (02) on page 55-5 (10) allows the length of need to be reduced for restrictive conditions. If there are restrictive conditions at 1 corner of a structure then the other 3 corners would use the L_R (Runout Length) from Chapter 49 and just the 1 corner with the restrictive condition would use the L_R value from Figure 55-5B.
23. It is acceptable to use the 3R Comfort Criteria for a sag vertical curve if it meets the criteria in 55-4.04 (04); these criteria may be used even if the work on the curve includes placing variable depth asphalt up to 18 inches thick. On 3R projects with more extensive reconstruction work it is desirable to meet the criteria in Chapter 44.
24. All markups on plans and documents need to be addressed. Failure to acknowledge markups can lead to a lower cooperation rating.
25. The Level One Criteria Checklist is to be submitted at each submittal. When there are no changes to the plans from the previous submittal that affect the Level One Criteria it is permissible to copy the previous Checklist form and add a comment. The comment should say that there were no changes to the plans that affect Level One Criteria. That statement should be initialed and dated for the current submittal.
26. When plotting soil boring logs for bridge projects, show elevations along the vertical grid for each boring log so the elevation of each soil sample can be ascertained. Do not include the road boring logs in the plans.

Limited Review Form

The Limited Review Form, used by reviewers, has been revised. Reviewers please begin using the new form immediately. The new form may be found at www.ai.org/dot/design/consult.htm .

Limited Review Certification

The Limited Review Certification has been revised. Please begin using the new form immediately. The new form may be found at www.ai.org/dot/design/consult.htm .

Corps Permits

Currently, INDOT has been receiving the Corps permit placards that need to be displayed at the project site. INDOT arranged to deliver those placards to the project site - - generally at the preconstruction conference. Until recently, placards were just issued for projects receiving an individual Corps permit.

Now the Corps issues a placard which must be displayed at the project site for Regional General Permits (RGPs), in addition to individual permits. Henceforth, when INDOT receives a placard for a project, the placard will be given to the designer (consultant or in-house designer), and it will be the designer's responsibility to deliver the placard to the project site in a timely fashion (generally at the preconstruction conference).

401 Water Quality Certification Form

IDEM has issued a new joint Wetland NPDES Permit/Section 401 Water Quality Certification Form. The new form may be found at www.in.gov/idem/water/planbr/401/application.html.

LaPorte County Drainage Board Permit Form

The LaPorte County Drainage Board has instituted a permit process for crossing regulated drains. A copy of the form may be found in Appendix C.

Right-of-Way Tracings Submittal

A component of the Right-of-Way Tracings Submittal is two sets of plans and cross-sections which are forwarded to the applicable County Drainage Board. When project limits extend into more than one county two additional sets of plans will need to be submitted for each additional county.

Minimum Vertical Clearance over Railroad

The existing minimum vertical clearance dimension for structures carrying roadways over railroads should be field measured. Standard track maintenance procedures performed by railroads often result in increases in the rail elevation. Therefore, the minimum vertical clearance dimension shown on prior construction plans will generally not be a true indication of the current minimum vertical clearance. All reports and plans identifying the existing minimum vertical clearance dimension over a railroad should indicate the date of the field measurement. On plans, this dimension should normally be shown on the profile view of the general plan sheet with a corresponding note identifying the date of the field measurement.

Structural Plate Pipe Arch Cost Data

For some large culvert locations the hydraulics recommendation letter will include a structural plate pipe arch sizing as well as the customary precast concrete box culvert or 3-sided culvert sizing. When this occurs, designers should evaluate both structures at the structure size and type stage and choose the more economical alternate. Where the hydraulics recommendation letter includes the option of a small to medium sized structural plate pipe arch, a Type 1 Deformed Pipe should be specified on the plans so the contractor has the option of providing either a corrugated metal or an elliptical concrete pipe.

INDOT has very little historical cost data for structural plate pipe arch structures. Cost data that is available from recent bid tabulations is given below. Designers should contact suppliers for additional cost information for specific sizes.

CONTRACT	LETTING DATE	ITEM	DESCRIPTION	QUANTITY	UNIT PRICE
R-20165	9/16/97	717-26046	PIPE ARCH, 0.109 IN. T&S, 0.138 IN. BOT, 28 SQFT	95 LFT	\$140
B-22807	12/17/96	717-26166	PIPE ARCH, 0.109 IN. T&S, 0.138 IN. BOT, 43 SQFT	78 LFT	\$210
R-23259	10/22/97	717-26236	PIPE ARCH, 0.109 IN. T&S, 0.138 IN. BOT, 55 SQFT	104 LFT	\$275
B-20916	6/4/96	717-26256	PIPE ARCH, 0.109 IN. T&S, 0.138 IN. BOT, 58 SQFT	110 LFT	\$150
R-22693	2/11/97	717-26306	PIPE ARCH, 0.109 IN. T&S, 0.138 IN. BOT, 64 SQFT	188 LFT	\$250
R-23259	10/22/97	717-26411	PIPE ARCH, 0.109 IN. T&S, 0.138 IN. BOT, 81 SQFT	114 LFT	\$300
M-23445	2/10/98	717-04722	PIPE ARCH, 0.168 IN. T&S, 0.188 IN. BOT, 119SQFT	100 LFT	\$396
R-22445	3/19/96	717-26656	PIPE ARCH, 0.138 IN. T&S, 0.168 IN. BOT, 131SQFT	110 LFT	\$325
R-23392	2/10/98	717-26657	PIPE ARCH, 0.168 IN. T&S, 0.188 IN. BOT, 142SQFT	140 LFT	\$264
M-23686	7/14/98	715-05252	PIPE, TYPE 1, DEFORMED, 1.90 m2	18.5m	\$419.25
R-23126	12/16/97	715-05027	PIPE, TYPE 1, DEFORMED, 1.90 m2	39m	\$573.77
R-23126	12/16/97	715-05042	PIPE, TYPE 1, DEFORMED, 2.03 m2	41.5m	\$326.83
RS-24801	3/20/01	715-05254	PIPE, TYPE 1, DEFORMED, 2.03 m2	12m	\$642.75
M-23589	8/11/98	715-05260	PIPE, TYPE 1, DEFORMED, 2.55 m2	12m	\$477
R-24432	2/22/00	715-05265	PIPE, TYPE 1, DEFORMED, 2.98 m2	96m	\$721
R-24729	2/22/00	715-05272	PIPE, TYPE 1, DEFORMED, 3.44 m2	48m	\$680
R-23907	11/16/99	715-05298	PIPE, TYPE 1, DEFORMED, MIN. AREA 74.3 SQFT	98 LFT	\$290

Specialty Projects Group Traffic Item Review Submission Requirements

When submitting projects for signal, signing, lighting or pavement marking reviews at the below project milestones, please send all submissions to the assigned project coordinator. Please send the coordinator one traffic item review package with separate sets for each type of review. The information desired at each submission is listed below. This way, all efforts are minimized.

Preliminary Field Check Submission:

- Signal – title sheet, signal plan sheets in 1:200 metric or 1" = 20' English scale (full size sets only)
- Signing – title sheet, proposed signing sheets
- Lighting – title sheet, proposed lighting sheets, calculations
- Pavement Marking – title sheet, typical cross section sheets, one set of pavement marking sheets

Final Field Check Submission:

- Signal – preliminary field check submission + signal detail sheets (if applicable) and special provision
- Signing – preliminary field check submission + sign detail sheets, *sign layout sheet, *sign cross section sheet, *sign shop drawing, sign summary table, calculations (if any?), special provision
- Lighting – preliminary field check submission (with markups), summary table, special provision
- Pavement Marking – preliminary field check submission (with markups) + pavement marking table and special provision

*These items are only applicable for all panel signs and non-standard (non-coded) signs in the MUTCD.

Final Plan/Tracing Submission:

- Signal – final field check submission and one extra signal mylar
- Signing – final field check submission (with markups) + cost estimate
- Lighting – final field check submission (with markups) + cost estimate
- Pavement Marking – final field check submission (with markups) + cost estimate

Note: “preliminary (*final*) field check submission” = all items submitted previously

Practice Pointers for Traffic Signal Design

The following is a list of practice pointers for which the INDOT Signal Unit takes into account during their plan reviews.

All Signal Detail Sheets shall include:

1. Preferred drawing scale of 1" = 20' (English) or 1:200 (Metric).
2. Intersection alignment and proper number of lanes.
3. All approaches with posted speed clearly identified.
4. All private driveways.
5. All public right-of-way lines.
6. All property lines.
7. All edge of pavement and shoulders.
8. Location of curbs, sidewalks and pedestrian ramps.
9. All pertinent pavement markings (lane lines, cross walks and stop bars).
10. All existing and proposed guardrail locations.
11. Underground and overhead utilities clearly identified.
12. Legend, Phase Diagram and Loop Tagging Table.
13. U.S. or State Route number including street name.
14. No traffic diagrams.

All Signal Designs shall take into account:

1. All electrical service shall be metered.

2. Any parking regulations should be noted at least 150' / 45 m from the stop bar or back to any detector.
3. All signal head indications shall be placed within 40' / 12 m to 150' / 45 m from the stop bar.
4. The designer shall verify the needed signal heads for the traffic movements as shown in the phase diagram.
5. All signal equipment shall satisfy the lateral clearances as specified in Chapter 49 for 4R projects and Chapter 55 for 3R projects.
6. Steel strain pole support heights are 30' / 9.1 m or 36' / 11.0 m.
7. Preformed loop detection shall be used where pavement is to be replaced.
8. Field verify all existing signal components.
9. Position and direction of aiming for all signal heads shall comply as specified in Chapter 77, Indiana Design Manual Part VII.
10. The values for detection setback distances in the table below shall be used in-lieu of those presented in Figure 77-5S in the IDM which were based on a metric posted speed.

Approach Posted Speed	Passage Time in Seconds from Detector to Stop Bar						
	1	2	3	4	5*	6	7
20 mph	9.0 m / 29'	17.0 m / 53'	27.0 m / 87'	36.0 m / 116'	45.0 m / 145'	53.0 m / 174'	59.0 m / 193'
25 mph	11.0 m / 36'	24.0 m / 78'	33.0 m / 108'	44.0 m / 144'	55.0 m / 180'	66.0 m / 216'	77.0 m / 252'
30 mph	14.0 m / 44'	27.0 m / 88'	41.0 m / 132'	54.0 m / 176'	67.0 m / 220'	80.0 m / 261'	94.0 m / 308'
35 mph	16.0 m / 51'	31.0 m / 102'	47.0 m / 153'	63.0 m / 204'	78.0 m / 255'	94.0 m / 306'	109.0 m / 357'
40 mph	18.0 m / 59'	35.0 m / 113'	54.0 m / 177'	72.0 m / 236'	90.0 m / 295'	108.0 m / 354'	126.0 m / 413'
45 mph	20.0 m / 65'	41.0 m / 132'	61.0 m / 198'	81.0 m / 264'	101.0 m / 330'	121.0 m / 396'	141.0 m / 462'
50 mph	23.0 m / 73'	45.0 m / 146'	67.0 m / 219'	89.0 m / 292'	112.0 m / 365'	134.0 m / 438'	156.0 m / 511'
55 mph	25.0 m / 81'	50.0 m / 162'	74.0 m / 243'	99.0 m / 324'	124.0 m / 405'	149.0 m / 486'	173.0 m / 567'
60 mph	27.0 m / 88'	54.0 m / 176'	81.0 m / 264'	108.0 m / 352'	135.0 m / 440'	161.0 m / 528'	188.0 m / 616'
65 mph	29.0 m / 95'	58.0 m / 190'	87.0 m / 285'	116.0 m / 380'	145.0 m / 475'	174.0 m / 570'	203.0 m / 665'

* INDOT typically uses 5 seconds passage time.

Other Traffic Related Items:

1. Existing sign plans for conventional highways are not required unless instructed otherwise.
2. New signs and/or reinstalled existing signs should be in accordance with latest INDOT Standards and specs.

Sign Design Guide

A new Sign Design Guide, dated April 9, 2002, is available. Please contact the Sign Design Unit at (317)232-5242 to obtain a copy.

INDIANA DEPARTMENT OF TRANSPORTATION
INDIANAPOLIS, INDIANA 46204-2249
INTER-DEPARTMENT COMMUNICATION

August 29, 2001

DOCUMENTATION OF COMPLIANCE
FOR
CATEGORICAL EXCLUSION

MEMORANDUM

TO: Ms. Peggy Spears, Project Coordinator
Division of Design

FROM: James E. Juricic, Manager
Environmental Assessment Section
Environment, Planning and Engineering Division

RE: Project: STP-3268 (), Des.: #9703980, Description: US 36 Small Structure Replacement,
Location: over County Run, 7.98 km E. of SR 1, County: Randolph

The Environmental Assessment Section has reviewed the above referenced project. It can be classified as a Categorical Exclusion. There is no Section 6 (f), E.O. 11990 Wetlands Findings or Section 7 of the Endangered Species Act involvement. The project involves the replacement of a small structure and the acquisition of a minor amount of right-of-way. The study is being approved to advance the documentation to the opportunity for a public hearing. It remains the responsibility of the applicant to distribute the necessary 36 CFR Part 800.11 (d) documentation as required. This is required by the current FHWA-IN Section 106 Consultation Procedures and to make sure that all necessary coordination is completed in order that the responsibilities of the FHWA under Section 106 have been fulfilled.

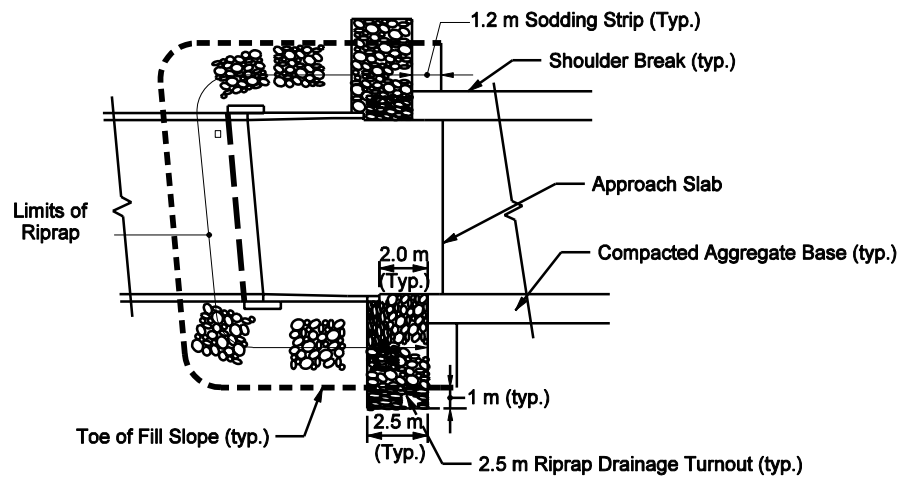
Mitigation measures included in this Categorical Exclusion are discussed in the document. Based on the review of the documentation attached, it has been determined that this project falls within the guidelines for the Categorical Exclusion 771.117.

Subsequent to the completion of the Public Involvement Procedures, the FHWA will indicate their concurrence below in regards to NEPA, Section 106 or 4 (f) requirements.

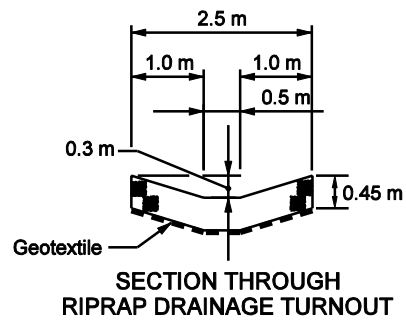
JEJ/SCS/ss
attachments

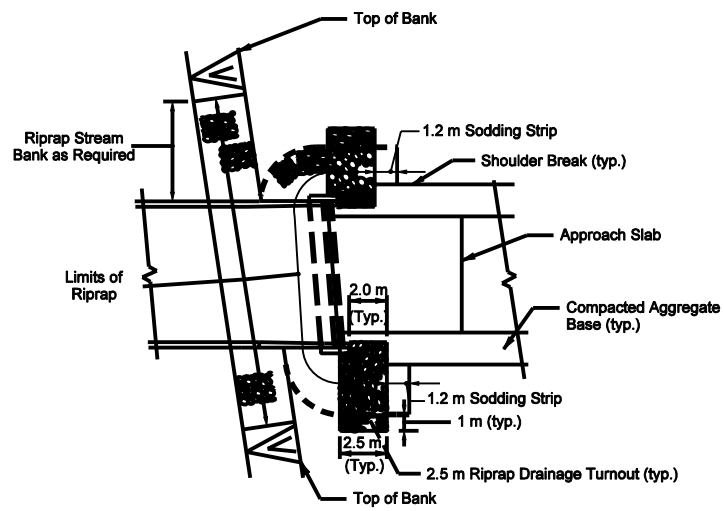
cc: John R. Baxter (FHWA) memo only
Pyland (3 copies)
✓Peggy Spears (3 copies)
Fox (memo only)
Project File 1 (original)

Concur: _____ Date: _____
John R. Baxter, Division Administrator

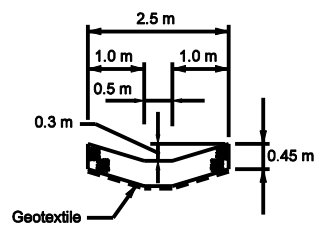


RIPRAP AND SODDING LIMITS WITH BARRIER TRANSITIONS ON APPROACH SLAB





RIPRAP AND SODDING LIMITS WITH BARRIER TRANSITIONS ON BRIDGE



SECTION THROUGH
RIPRAP DRAINAGE TURNOUT

LAPORTE COUNTY DRAINAGE BOARD

**Suite 101, Courthouse, 813 Lincolnway
LaPorte, Indiana 46350-3400
(219) 326-6808 x285**

**APPLICATION FOR PERMISSION TO ALLOW WORK ON
A STREAM CROSSING OVER A REGULATED DRAIN**

APPLICANT INFORMATION

Name: _____

Address: _____

Telephone Number: _____

PROJECT INFORMATION

Project Manager: _____

Project Location: _____

Project Description: _____

Starting Date: _____

Completion Date: _____ (Anticipated)

On behalf of the Applicant listed above, I hereby request written permission from the LaPorte County Drainage Board to begin work on the project described above. Plus, I affirm that Applicant has obtained all permits necessary for this project, and that in consideration for said permission the Applicant agrees to follow all of the Terms of Approval listed below.

Date: _____

Signature: _____

Print Name: _____

TERMS OF APPROVAL

The LaPorte County Drainage Board hereby grants the Applicant permission to work on the above project, subject to the following terms:

1. Applicant is required to contact the LaPorte County Surveyor's Office at (219) 326-6808 (ext. 285) at least 24 hours prior to the start of the above project to arrange for a preliminary inspection of the project site in order to make certain that proper netting is in place.
2. If the project site fails the preliminary inspection for any reason, work on the project must be stopped immediately and shall not resume until the project site passes the preliminary inspection.
3. Applicant is required to contact the LaPorte County Surveyor's Office at (219) 326-6808 (ext. 285) at least 24 hours prior to the completion of the above project to arrange for a final inspection of the project site in order to make certain that debris has not been left in the ditch.
4. If the project site fails the final inspection for any reason, the Applicant shall immediately remedy any problem discovered during the final inspection.
5. If the Applicant fails to comply with the terms of this approval, Applicant agrees to pay for any damages to the project site as determined by the LaPorte County Surveyor's Office and/or the LaPorte County Drainage Board, as well as any costs or expenses associated with remedying, repairing and/or cleaning the project site, including any collection costs and attorney fees incurred by the LaPorte County Surveyor's Office and/or the LaPorte County Drainage Board to enforce the terms of this approval.

6. Other terms: _____

LaPorte County Drainage Board

Date: _____

By: _____

Print Name: _____